

doubtful, there can be no doubt as to the sucker-like functions of the appendages in Pneumodermon.—Evidence in favour of the view that the coxal gland of Limulus and of other Arachnida is a modified nephridium, by G. L. Gulland, M.A. (plate 36), with a note thereon by Prof. E. Ray Lankester, in which the following important statement is made:—"The space in the connective tissue into which the young nephridium opens internally is not a blood space. The blood system in the larger Arthropoda is altogether distinct from the general system of lacunæ of the connective tissue. The lacunæ form a lymphatic system which contains a liquid distinct from the blood: they represent the body cavity, and as such receive the internal openings of the nephridia."—Notes on the embryology of Limulus, by Dr. J. S. Kingsley (plates 37-39).—On the anatomy of the Madreporaria, part i., by G. Herbert Fowler, B.A. (plates 40-42).—The issue of the "Supplement" numbers of this journal being found inconvenient, it has been decided to publish its numbers for the future at such intervals as the accumulation of material renders desirable. Though more than four numbers will thus in all probability be published in the course of a year, the title will remain unaltered. Four numbers will make a volume.

Two papers are especially noteworthy in the *Journal of Botany* for November:—Rev. H. E. Fox and Mr. F. J. Hanbury's "Botanical Notes of a Tour in Caithness and Sutherland," where they had the opportunity of visiting large tracts of country from which botanists are, as a rule, now practically shut out, that they may not interfere with the sports of the owners; and Mr. F. N. Williams's careful "Enumeration of the Species and Varieties of *Dianthus*."

The number for December is signalled by a continuation of the record of Mr. Thos. Hick's important observations on protoplasmic continuity in the Fucaceæ. He has now detected this continuity in two other species, *Hemanthalea lorea* and *Laminaria digitata* (the latter not strictly belonging to the Fucaceæ), in the cortical and central, less certainly in the epidermal tissue. In the latter species the continuity is effected through the intervention of sieve-plates. Mr. James Britten gives a complete history of the important botanical collections made by Messrs. J. R. and G. Forster.

The Proceedings of the Linnean Society of New South Wales, vol. x. part 2, July 31, contains the following papers:—W. Macleay, revision of the genus *Lamprina*, and descriptions of new species; on two new Australian Lucanidæ; on new fishes from the Upper Murrumbidgee.—N. de Miklouho-Maclay, on the zoology of the Maclay coast, New Guinea, ii.; on two new species of Dorcopsis (plates 19 and 20); on the brain of *Halicore australis* (plate 24).—Dr. R. von Lendenfeld, on Australian sponges lately described by Carter; on a Medusa from the tropical Pacific.—A. G. Hamilton, on the fertilisation of *Goodenia hederacea* (plate 21).—K. H. Bennett, on the habits of *Falco subniger* and *Glareola prallaria*.—Rev. J. M. Curran, on the geology of Dubbo (plates 22 and 23).—Baron von Mueller, on a remarkable Haloragis from New South Wales.—A. S. Olliff, the Cucujidæ of Australia.—D. Ogilvy, description of new fishes.—E. P. Ramsay, notes on birds from New Guinea; on a new species of Collyriocincla.—G. F. Mathew, R.N., on the natural history of Claremont Islands; on the butterflies of Thursday Island.—W. A. Haswell, M.A., jottings from the biological laboratory of Sydney University.

Zeitschrift für wissenschaftliche Zoologie, Band 42, Heft 3, October 27.—On the movements of the foot in the Lamellibranchs, by Dr. A. Fleischmann (with five woodcuts).—On the oceanic fauna off the coast of New Guinea, by Dr. R. Greeff (plates 12-14). Rolas or Pigeon Island is separated from St. Thomas by a channel of from 3 to 4 km. wide. Under favourable winds, shoals of larval and mature Crustacea, Mollusca, Echinoderm larva, Medusa, Radiolaria, &c., float through. The general description of the place is most alluring; surely the proprietor, Mr. F. José de Araujo is in the possession of an earthly paradise for a marine zoologist. In this memoir Dr. Greeff describes and figures several new species of Tomopteris and Alciopæ, giving, at the same time, anatomical details.—Contributions to the anatomy and histology of *Priapulus caudatus*, Lam., and *Halicryptus spinulosus*, V. Sieb., by Dr. W. Apel (plates 15-17).—Contributions to our knowledge of the Mallophaga, by Dr. F. Grosse (plate 18). These researches are chiefly based on a remarkable new parasite from a pelican found by Dr. Reiss in Chili, which is described as belonging to a new genus and species (*Tetrophthalmus chilensis*).—On the

reproductive organs in *Nematois metallicus*, Pod., by N. Chodkovsky (plate 19), a memoir of importance to the Lepidopterist.

Archives Italiennes de Biologie, tome vi. fasc. 2, March 31, contains:—Clinical and physiological researches on paraldehyde, by Dr. V. Cervello.—On the physiological action of antipyrine, by Dr. F. Coppola.—On perimetry, and on self-registering perimeters, by Dr. Ferri.—On the effects of salt on Cercaria, by Prof. E. Perroncito.—On cicatrisation after wounds in the kidney; and on the partial regeneration of that organ, by G. Pisenti (plate).—On albumen in the saliva, and the bile in albuminuria, by Matilda Dessalles.—On the minute structure of the air-sacs in birds, by Dr. E. Ficalbi (abstract).—On anomalies in the number of the semi-lunar, aortic, and pulmonary valves, by G. Martinotti, and G. Sperino.—On microphytes in the normal human epidermis, by Prof. G. Bizzozero (from *Virchow's Archiv*), December, 1884 (plate).—On the organ of Corti in the Cercopitheci, by Prof. A. Tafani (illustrated).—Notes on the anatomy of a negro (iii.), by Prof. Giacomini (plates).

The October number of the *Nuovo Giornale Botanico Italiano* contains only two original papers:—On the Bryology of the neighbourhood of Cuneo, by Sig. Macchiati; and On the nature and development of the integuments of the seed in *Tilia*, by Sig. Mattiolo. These integuments may be classified into two layers, the inner of which displays the light line characteristic of the genus *Tilia*, and which is due to the formation of lignin.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, December 17.—"A New Form of Spectroscope." By J. Norman Lockyer, F.R.S.

Some two or three years ago, when the sun-spot work carried on at Kensington revealed the different behaviour, in different spots, of lines visible in the spectra of the same element, it seemed desirable to extend similar observations to metallic prominences, and, if possible, in such a way that comparisons over a considerable reach of spectrum should be secured.

It then struck me that a grating cut in half, with one part movable, would afford a ready means of doing this.

Circumstances prevented the realisation of this scheme till quite recently, when I put into Mr. Hilger's hands a grating presented to me by Mr. Rutherford.

The result is excellent. It is possible to observe C and F, for instance, together, quite conveniently, with either a normal or a tangential slit. The only precautions necessary are to see that one-half of the light passing through the object-glass falls on one-half of the grating, and that the rays which come to a focus on the slit plate are those the wave-length of which is half way between the wave-lengths compared.

Linnean Society, December 17.—Mr. Frank Crisp, LL.B., Vice-President and Treasurer, in the chair.—*Heritiera littoralis*, var. *macrophylla*, Dr. Masters showed a branch with leaves and fruit, received from Prof. Cornu, of the Jardin des Plantes, Paris. The adult leaves, of very large size, are dark green above, and silvery white beneath. The latter, due to an investment of shining, peltate, membranous scales, has given rise to the name "Looking-glass tree." This Sterculaceous tree is a native of the tropics of the Old World, in the vicinity of coasts, and occurs inland in the hills of Eastern Bengal. Kurz considered the species and its variety as quite distinct, a view not held by Dr. Masters.—Mr. Charles Stewart exhibited the stridulating organ of a Spiny Lobster (*Palinurus*); he showed under the microscope the file-like bow and its two tubercles, also, by means of a softened specimen attached to the carapace, he produced the peculiar grating noise which the animal makes during life.—Mr. J. G. Baker exhibited specimens of *Lycopodium complanatum*, collected by the Rev. A. Lawson on the Somersetshire side of Exmoor, near Porlock, thus corroborating those who have ascribed a British habitat to the species in question.—Mr. Clement Reid drew attention to a series of fossil seeds and plants from the "Forest Bed" of the Cromer district, Norfolk; their very excellent state of preservation enabled their comparisons with living plants to be easily made out, and thus a clue given to the history of our present flora.—Mr. Thos. Christy exhibited a plant of *Angræcum sesquipedale* in flower, and a plant of *Catasetum purum*, showing flowers erect and reversed in the same spike. In none of the flowers was the ovary visibly twisted, but in long ovaried orchids it is often very difficult to detect the twisting of the ovary by the external aspect. This

specimen illustrated the fact that light or the absence of light was not the cause of the alteration of position.—The following specimens were exhibited from Mr. E. M. Holmes, viz. :—(1) *Ustilago marina*, Dur., a fungus new to Britain, having been discovered by Mr. Holmes, last autumn, growing on *Scirpus parvulus* at Studland Bay, Dorset, on ground covered by brackish water ; (2) fruit of *Azela cuangensis* from Limpopo, Natal, sent him as the pod of a mahogany-tree ; (3) fruit of *Trichilia Dreyeri*, from the same district,—oil is obtained from the seeds by boiling, and with this insecticide the Kaffirs anoint their bodies.—Mr. F. R. Cheshire gave an epitome of his late researches on the tongue of the bee, describing the structure and mode in which he believes suction of nectar takes place.—A paper was read, on Entomostraca collected by Mr. A. Haly in Ceylon, by Prof. G. S. Brady. The freshwater forms were obtained at Colombo ; the marine species were dredged at a depth of two fathoms in the Gulf of Manaar. The freshwater Copepoda and Cladocera approach well-known European species. Among the Ostracoda is a curious new generic form, *Cyprinotes*. Additional information is also given by the author respecting *Cypris cylindrica* (*Malcolmsonia*) and *C. subglobosa*.—Mr. H. N. Ridley read a paper on orchids from Madagascar. The collection (fifty in number) was obtained by Mr. Fox in the neighbourhood of Imerina. Among them are three genera new to the flora of the island, viz. *Arnottia*, indigenous to the Mauritius ; *Brownleea*, hitherto only known from South Africa ; *Holothrix*, an East African representative. Another interesting novelty is *Satyrium gigas*.—Two other papers, read in abstract, were : a monographic revision of the recent Ephemeridæ, part iv., by the Rev. A. Eaton ; and Colombian species of the genus *Diabrotica*, part ii., by Mr. Joseph Baly.

Anthropological Institute, December 8.—Mr. Francis Galton, F.R.S., President, in the chair.—Mr. H. H. Johnston exhibited a collection of photographs of African natives and scenery.—Mr. H. W. Seton-Karr exhibited a number of photographs of North American Indians, taken by him during his recent visit to Canada.—Mr. Joseph Hatton exhibited several ethnological objects collected by his son, the late Frank Hatton, in North Borneo. Mr. W. M. Crocker also exhibited some objects from Borneo ; and Mr. R. Meldola exhibited some photographs of Nicobarese.—A paper by Mr. E. H. Man, on the Nicobar Islanders, was read, in which the author described the wild race inhabiting the interior of Great Nicobar and called by the inhabitants of the other islands of the group "Shom Pen." It appears certain that they are the descendants of a very ancient aboriginal population of Mongolian origin. The height of the males appears to range between 5 feet 2 inches and 5 feet 8 inches ; their skin is fairer than that of the generality of the coast people, who on their part are less dark than the Malays ; the hair is straight, and is commonly worn uncut and unkempt. Their dwellings are small and erected on posts ; the floors being raised six or seven feet above the ground necessitates the use of ladders. Mr. Man hopes before long to be able to supplement in many particulars the meagre information that has hitherto been obtainable regarding the Pen, but the task is one of considerable difficulty.

Royal Meteorological Society, December 16.—Mr. R. H. Scott, F.R.S., President, in the chair.—Mr. J. Hartnup, Mr. A. W. Preston, Mr. R. Sheward, and Mr. W. B. Worthington were elected Fellows of the Society.—The following papers were read :—On the influence of forests upon climate, by Dr. A. Woeikof, Hon. Mem. R. Met. Soc. The first step towards a scientific investigation of the influence of forests upon climate was taken by the establishment of the Bavarian Forest Meteorological Stations. This example was followed by Germany, France, Switzerland, Italy, and other countries. As a general result it was found that during the warmer season the air and earth temperatures were lower in the forest, as compared with contiguous woodless places ; that their variations were less ; and that the relative humidity was greater. Dr. Woeikof's discussion of this question shows that in the western portions of the Old World extensive forests materially influence the temperature of neighbouring localities, and that the normal increase of temperature from the Atlantic Ocean towards the interior of the Continent is not only interrupted by their agency, but they cause the summer to be cooler in regions situated further in the interior than those nearer the sea. Hence, forests exert an influence on climate which does not cease at their borders, but

is felt over a greater or less district, according to the size, kind, and position of the forests. From this it naturally follows that man, by clearing forests in one place and planting others in another, may considerably affect the climate.—Report on the phenological observations for 1885, by the Rev. T. A. Preston, M.A., F.R. Met. Soc. The year has been a very dry one, and this has acted in such a manner on vegetation that, although the winter was mild, plants were very late in flowering, and lasted only a short time. The bloom was often profuse, and, as bees and other insects could visit them, the crop of fruit was unusually great—the apples, for instance, being often spoilt in quality from the enormous number on the trees ; whilst in the case of wild fruits the brilliant colour of the bushes when in fruit was quite as beautiful as when in bloom. But at the same time the drought acted very prejudicially, especially to root-crops and bush-fruit, as well as strawberries. In the case of the root-crops, the seed had great difficulty in germinating, and the weak plants were at once overpowered by insect pests, so that the crops of turnips were generally complete failures. The insect pests also did much damage to bush-fruit, while the drought prevented the strawberries from swelling. The corn did not suffer to any great extent, the dry season allowing the land to be prepared ; and, although the straw was often short, the yield was not unsatisfactory. A general absence of butterflies was noticed in some places. In the south of England the white butterflies were most abundant at one time, but the autumn butterflies were not so plentiful as usual.—Etudes sur les crépuscules rosées, by Prof. A. Ricco, of Palermo.—The storm of October 15, 1885, at Partenkirchen, Bavaria, by Col. M. F. Ward, F.R. Met. Soc. This was the most destructive storm which has occurred in this valley since the winter of 1821–22. The storm burst suddenly at 7 p.m., and lasted about half an hour, but in that short period nearly every house was unroofed, and it is computed that in one forest alone above 250,000 trees were laid prostrate.

Geological Society, December 2.—Prof. T. G. Bonney, F.R.S., President, in the chair.—Charles Dawson, Francis J. Ede, Lewis Edmunds, Henry A. Gordon, George Frederick Harris, Samuel Learoyd, John Main, Mansfeldt Henry Mills, Rev. Thomas Randell, James Radcliffe, Andrew Edmund Castle Stuart, Tudor Gruffydd Trevor, and Arthur Smith Woodward were elected Fellows of the Society.—The following communications were read :—On some borings in Kent ; a contribution to the deep-seated geology of the London Basin, by W. Whitaker, B.A. (Communicated by permission of the Director-General of the Geological Survey.) Seven deep borings in the eastern part of Kent were described, all of them reaching to the Gault. The chief one is at Chatham Dockyard, where, after passing through the whole thickness of the Chalk, the Gault was found to be 193 feet thick, whilst the Lower Greensand was only 41 feet, and was underlain by Oxford Clay, a formation not before known in Kent. These parts involve the thinning of the Lower Greensand from 200 feet at the outcrop a few miles to the south, and the entire loss of the whole of the Wealden series, which, further south, exists in great force, the Weald Clay being 600 feet thick, or perhaps more, and the Hastings Beds 700 feet or more. Still further south, in the central part of the Wealden district, there are outcrops of the Purbeck Beds, whilst the Subwealden boring continues the series downwards. We have thus an addition to the beds wanting at Chatham of some 400 feet of Purbeck and Portlandian, of over 1100 feet of Kimeridgian, and of nearly 500 feet of Corallian, &c. In a section of 32 miles, therefore (the distance between the Subwealden and the Chatham borings), we have a thinning of beds to the extent of over 3400 feet, or at the average rate of about 100 feet in a mile. This northerly thinning agrees with the facts that have been brought before us from other deep borings in and near London ; but the Chatham boring is the first in the London Basin in which a Middle Jurassic formation has been found. The teaching of the deep borings, as a whole, is that north of the Thames older rocks rise up beneath the Cretaceous beds, whilst on the south newer rocks come in between the two. The question of the finding of the Coal-measures beneath parts of the London Basin seems to admit of a hopeful answer, whilst the lesson of the deep borings as regards water-supply is that there is small chance of getting water from the Lower Greensand at great depths underground. It would be well if underground exploration could be conducted on a systematic plan, with proper regard to both topographical and geological considerations, and not left any longer to the

chance work of people in search of water.—Note on some recent openings in the Liassic and Oolitic rocks of Fawler in Oxfordshire, and on the arrangement of those rocks near Charlbury, by F. A. Bather; communicated by Prof. J. Prestwich, F.R.S. The River Evenlode rises in the Lower Lias of the Vale of Moreton, traverses the range of Oolites, and joins the Isis opposite Wytham Mill. Lias is exposed to about three-quarters of a mile below Fawler, where Great Oolite is brought down by a fault; and in the Geological Survey map Lower Lias is brought down the valley to within half a mile of Charlbury railway station. In this paper the author gives reasons for believing that the distribution of the different beds constituting the Lias in the Evenlode Valley do not agree with the Geological Survey map, nor with Prof. Hull's description; recent sections and borings made for clay, used in brick- and pottery-making, having exposed Lower Lias clay in a brick-yard at Fawler, Marlstone and Upper Lias clay in a neighbouring combe, and in a long section 100 yards north of the brick-yard Inferior Oolite comes in upon the Upper Lias clay. On examining the banks of the Evenlode, north of Charlbury, it was found that clays referred in the Survey map to Lower Lias are really Upper Liassic, being above the Marlstone, sections of which are exposed near Culsham Bridge. It was shown how these corrections in the mapping of the ground are explained by the section along the line of the Evenlode and by the dips of the beds.

Royal Microscopical Society, December 9.—A. D. Michael, F.L.S., Vice-President, in the chair.—Mr. Swift's large photo-micrograph of the tongue of the blow-fly, which had obtained the prize medal at the recent Exhibition of the Photographic Society, was exhibited. The plan adopted was to take an enlarged photograph from a small image obtained by a paraffin lamp by artificially strengthening the image where required.—Mr. Crisp exhibited Prof. Klein's microscope for observing crystals when heated to a high temperature; also an apparatus for enabling four photo-micrographs to be taken of the same object, so as to give a different length of exposure to each or to photograph different parts of an object rapidly.—Dr. Maddox exhibited a series of photographs of inked surfaces covering pencil lines. Mr. Crisp referred to a curious case in which a forger wanted to add some words to a bond which had been originally written with very pale ink. The added words were darker, and he therefore retraced the whole of the original writing to make it look all alike, but examination with the microscope at once detected the forgery.—Dr. E. Crookshank read a paper on the cultivation of bacteria, which he illustrated by numerous drawings and by a series of preparations. He also exhibited and described a collection of apparatus of the latest and most approved construction for the cultivation of bacteria and the preparation of the media employed.—Mr. Robertson described a method of preparing a section of spinal cord by soaking in picocarmine before cutting.—Mr. Meates's note on a new highly-refractive medium for mounting sulphide of arsenic was read.—Mr. Cheshire read a paper on the pulvillus of the bee, calling attention to a notch found upon the leg of the bee, and explaining what he considered to be its function as opposed to the explanations given by some other observers.—Mr. J. W. Groves exhibited some mounted sections cut by the large Barrett microtome to show how large good sections could be made with the machine.—Eleven new Fellows were elected and proposed.

DUBLIN

Royal Society, November 18.—Physical and Experimental Science Section.—Prof. W. F. Barrett in the chair.—On the beryls and ilolite of Glencullen, co. Dublin, by J. Joly, B.E. The beryls of Glencullen, while presenting the angles and faces of normal beryl, are found, on microscopic examination, to consist of a mixture of beryl and orthoclase. The latter mineral amounts sometimes to 72 per cent. of the entire crystal. There is evidence that this phenomenon was produced by alteration, not by inter-crystallisation in the first instance. The orthoclase contains much ilolite in sharp well-defined crystals. The beryls of the Dublin granite lose all colour when heated for a few days to a temperature of about 300° C. An hour's heating at 350° C. deprives them of colour. The bearing of this phenomenon on the history of the granite is pointed out by the author.—On the absolute weights of the chemical atoms, by G. J. Stoney, D.Sc., F.R.S.—On a new form of instrument for determining the magnitudes and colours of stars, by John

Ballot; communicated by Howard Grubb, M.E., F.R.S. The apparatus consists of an arrangement attachable to the draw-tube of a telescope, by means of which an image of small illuminated apertures can be thrown into the field of the eyepiece and viewed by an observer at the same time as the image of the star formed by the objective. The light is supplied by a small incandescent Swan's light condensed by a reflector, and is passed through four sets of slides or revolving wheels, the first containing a wedge of neutral-tinted glass, the second a set of microscopic apertures of varying sizes, and the third and fourth sets of seven coloured glasses. By those four slides it is possible to regulate the size, colour, and intensity of the ghost-star, and thus form a standard by which the magnitude and colour of any star can be determined. The two coloured slides are supplied in order that secondary tints may be obtained by combination of any two primary colours. The accuracy of the instrument depends of course on the constancy of the lamp. This constancy can be obtained, within moderate limits, by proper electrical contrivances, but reference should occasionally be made to standard stars. Even though the source of light be not absolutely constant, it appears probable that a better result will be obtainable by such an apparatus than by any in which the constancy of sensitiveness of the human eye has to be depended upon from observation.—Thomas Edmondson exhibited the new circular calculating-machine invented by Joseph Edmondson, Halifax.—Howard Grubb exhibited Wilson's new sunshine-recorder.

Natural Science Section.—Presidential Address to the Royal Geological Society of Ireland by Prof. J. P. O'Reilly, C.E., M.R.I.A., &c.—Note on *Halcampa chrysanthellum*, Peach, by Prof. A. C. Haddon. A full and critical note on this species, which is shown to embrace *H. vittata*, Kef., *H. bilateralis*, Kef., *H. kefersteini*, Andr., and *H. adreii*, Hadd.—On certain sense-organs occupying the perforations in the shell of the Brachiopoda, by Prof. Sollas, D.Sc., &c. The caecal processes occupying the canals in the Brachiopod shell are extensions of the outer epithelium of the mantle. At the outer end, which lies immediately beneath the chitinous peristomum, each terminates in a large cell with a large nucleus and nucleolus, invested by other smaller cells. The large cell is continued into a nerve-fibril, which runs axially down the caecal process, and enters the nervous layer of the mantle. This is the structure of a sensory end-organ, which in this case seems to transfer luminous radiations.—Additional note on *Macrozamia denisonii*, by Prof. W. R. McNab, M.D. This Cycad, known in gardens as *M. denisonii*, but which botanically is *M. perovskiana*, Miguel, has recently produced a fine female cone in the Royal Botanic Garden, Glasnavin, and was noticed at the June meeting of the Society. The cone was cut on September 1, and shows in a very beautiful manner the close series of small sterile scales which form the whole base of the sessile cone. Although the cone looked a terminal structure, it forms a lateral branch, and now (November) the young leaves are developing from the growing axis.—On New Zealand Coleoptera, by D. Sharp, M.B. No beetles from New Zealand were known to Linnaeus, and up to 1867 about 150 species had been noted; now about 1500 species are known to the author, who estimates that the Coleoptera of New Zealand will probably number from 3000 to 3500. In the present paper a special scrutiny is made of the Pterostichini and Otiorhynchini. The Coleopterous fauna is analogous to that of Europe and other continental regions, but contains a large proportion of forms which are to be regarded as little evolved. Cetoniidae are wanting, and the Buprestidae are represented by two minute and obscure forms. The Phytophaga, which, like the two preceding groups are remarkable for the brilliancy of their colouring, are few in number, small in size, and dull coloured. So also with the weevils. There are no Longicornes with tufted antennae, and no horned Lamellicornes. The Coleopterous fauna is remarkable for the number of isolated forms which have little or no connection with the ordinary forms of the island. The Coleopterous fauna of New Zealand seems to have most affinity with that of Chili and Patagonia, and but little with the Australian fauna, many of the most characteristic Australian forms being wholly unrepresented in New Zealand.

SYDNEY

Royal Society of New South Wales, August 5.—Prof. Liversidge, F.R.S., President, in the chair.—The Rev. P. MacPherson, M.A., read a paper on some causes

of the decay of the Australian forests. Photographs of a tree near the Lane Cove Road, which measured about 25 feet in circumference at a height of 30 feet from the ground, were shown by Mr. H. C. Russell, B.A. He thought that such a rare relic of a past era in the forest-growths of Australia should not be lost, and moved that the Government be asked to reserve the ground on which it stands.

PARIS

Academy of Sciences, December 14.—M. Jurien de la Gravière, Vice-President, in the chair.—Movements of the molecules of the so-called "solitary wave" propagated on the surface waters of a canal (continued), by M. de Saint-Venant.—On a method of analysis applicable to the study of the hydrocarbon mixtures of the aromatic series, by MM. C. Friedel and J. M. Crafts. By the process here described all the four isomeric bodies answering to the formula C_8H_{10} (ethylbenzene and the three xylenes) become transformed to substances as easily separable as most bodies dealt with in mineral analysis. Not only is this effected without loss of matter, but the combinations when finally analysed are found to possess from five to seven times the weight of the hydrocarbon used in the analysis.—Remarks on the new specimens recently deposited in the Palæontological Department of the Museum, by M. Albert Gaudry. Amongst these is the entire skeleton of a fossil edentate (*Scelidotherium leptoccephalum*) from the Buenos Ayres district, apparently a contemporary of the Megatherium and Glyptodon; also a remarkably well-preserved *Mystriosauros*, and castings of a New Zealand *Megalanina*, of a Russian *Elasmotherium*, and of some *Dinoceras* from the Rocky Mountains.—Claim of priority for the use of the sulphate of copper against brown rust vindicated for M. Benedict Prevost, by M. de Lacaze-Duthiers.—On a new theory of algebraic forms, by Prof. Sylvester.—On the propagation of the movement in an indefinite fluid (second part), by M. Hugoniot.—Remarks on the *Annuaire* for the year 1886, presented to the Academy on behalf of the Bureau des Longitudes, by M. Faye.—Remarks on MM. Faudel and Bleicher's "Materials for the Study of Prehistoric Alsace," presented by M. Hirn.—Observations of Fabry's comet and of Barnard's comet made at the Observatory of Algiers with the o'gom. telescope, by M. Trépied.—Observations of Barnard's new comet made at the Paris Observatory equatorial of the West Tower, by M. G. Bigourdan.—Note on the construction of the large double-meridian circles, by M. Gruey.—On a new class of integrable linear differential equations, by M. Halphen.—On a new method of generating unicursal algebraic curves, by M. G. Fourret.—On the movement of a point in a plane and on imaginary time, by M. L. Lecornu.—On certain geometrical surfaces of the third order possessing an infinite number of umbilici, by M. A. de Saint-Germain.—On the construction of machines intended for the electric transmission of power in connection with the electric machines at present working between Creil and Paris, by M. Marcel Deprez.—An inquiry into the causes that have momentarily arrested the experiments on the transmission of power between Creil and Paris, by M. A. Sartiaux. The accident, the first recorded for over a month, was shown to be caused by defective isolation along the line of transport resulting from accidental communications with the earth, which may easily be avoided in future.—Note on the relations existing between the absorption of light and the emission of phosphorescence in compounds of uranium, by M. H. Becquerel. The molecular state of these compounds causes them to exercise on light an elective absorption of harmonic radiations, while some of them emit by phosphorescence inferior harmonic luminous radiations of the absorbed rays. The absorption seems due to vibratory motions caused by the influence of the incident radiations, and apparently synchronous with the absorbed rays.—Spectrum of the nitrogen bands: its origin, one illustration, by M. H. Deslandres. With the aid of M. Cornu's photographic apparatus, the author has determined beyond all doubt the origin of a whole group of these ultra-violet bands, which form the spectrum of a nitrogen and oxygen compound, so far confirming Ångström's well-known view.—Note on the diffusion of heat, by M. Léon Godard.—A study of the hydrates of arsenic acid ($AsO_5 \cdot 3HO$, and $AsO_5 \cdot 2HO$), by M. A. Joly.—Researches on the formation of the vast deposits of nitrate of soda in certain parts of South America, by M. A. Müntz. This nitrate appears to be the result of a double decomposition between the nitrate of lime and marine salt. But it was not formed in the places it at present occupies, where it has been gradually concentrated

under divers outward influences.—Fresh researches on the various compounds of proteine, by M. Paul Schutzenberger.—Note on the preparation of benzoylcyanacetic ether and of cyanacetophenone, by M. Haller.—On the accumulation of nitrogen in ground kept constantly under grass, by M. P. P. Dehérain.—Note on a microbe whose presence seems to be connected with the development of rabies, by M. H. Fol.—On the construction of the jaw-bones of vertebrate animals, by M. A. Lavocat.—On the development of the basin in the cetaceans, by M. H. P. Gervais.—On the development of the horny layer in the gizzard of poultry, and of the glands secreting it, by M. Maurice Cazin.—On the development of the tonsils in mammals, by M. Retterer.—Researches on the comparative anatomy and physiology of the trigeminal, facial, and cephalic sympathetic nerves in birds, by M. Laffont.—Remarks on two species of *Balanoglossus* (*B. hacksi*, from Japan, and *B. talaboti*, from the district of Marseilles), by M. A. F. Marion.—On the skeleton of the extinct genus *Scelidotherium*, recently deposited in the Paris Natural History Museum, by M. P. Fischer.—On the action of chlorophyll on the carbonic acid outside the vegetable cell, by M. P. Regnard.—Note on the stratigraphic structure of the Menez Hills, Brittany, by M. Charles Barrois.—A chemical study of the substances brought up during the soundings of the *Travailleur* and *Talisman* Expeditions: constant presence of copper and zinc in these deposits, by M. Dieulaufait.—On the non-nitrous or slightly nitrous diet usually recommended in the case of diabetes, by M. Boucheron.—Note on some fresh documents advanced to support the theory of a cosmic origin of the late crepuscular glows, by M. José J. Landerer.

CONTENTS

PAGE

The Load-lines of Ships	169
The Wanderings of Plants and Animals. By Dr. Alfred R. Wallace	170
European Butterflies. By R. McLachlan, F.R.S.	171
Analytical Geometry	172
Two Years in the Jungle	173
Our Book Shelf:—	
Blanchard's "Traité de Zoologie Médicale"	174
Haushofer's "Mikroskopische Reactionen"	174
Thompson's "Bibliography of Protozoa, Sponges, Cœlenterata, and Worms"	174
Sorley's "Ethics of Naturalism"	175
Clark's "Transit Tables for 1886"	175
Letters to the Editor:—	
The Late Total Eclipse.—A. S. Atkinson	175
Brilliant Meteor.—John Stevenson	176
Models Illustrative of Phyllotaxis.—Dr. Maxwell T. Masters, F.R.S.	176
The Viper (<i>Vipera berus</i> , L.).—R. Morton Middleton, Jun.	176
Ventilation.—Col. J. F. Tennant, R.E., F.R.S.	176
Snails Eating Whitening.—Edward B. Poulton	176
Blackbird with White Feather.—Joseph John Murphy	176
Cycles	177
Alfred Tribe. By Dr. J. H. Gladstone, F.R.S.	180
Jordan's Photographic Sunshine Recorder. (<i>Illustrated</i>)	180
Meteorology in the New England States	181
Notes	182
Our Astronomical Column:—	
Total Solar Eclipse, 1886 August 28-29	184
Fabry's Comet	184
β Cygni or 6 Cygni?	184
Barnard's Comet	185
The Pulkowa Observatory	185
Suspected "New" Star	185
Astronomical Phenomena for the Week 1885	
December 27-1886 January 2	185
Geographical Notes	185
The Paris Academy of Sciences	187
The New Zealand Institute	187
University and Educational Intelligence	188
Scientific Serials	188
Societies and Academies	189